LYLES CHEVROLET COMPANY, INC.

1200 NORTH MAIN STREET
P.O. BOX 5408
HIGH POINT, NORTH CAROLINA 27262
(919) 884-2288

FEBRUARY 22, 1993

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT
HEALTH & NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL MANAGEMENT
GROUNDWATER SECTION
WINSTON-SALEM REGIONAL OFFICE
8025 NORTH POINT BOULEVARD
WINSTON-SALEM, NORTH CAROLINA 27106

GENTLEMEN:

ENCLOSED IS THE UST REMOVAL AND SITE INVESTIGATION REPORT, FOR LYLES CHEVROLET COMPANY. THE WORK WAS DONE BY ENSCI CORPORATION OF HIGH POINT, N.C. THIS REPORT IS BEING SUBMITTED IN ORDER TO COMPLY WITH 40CFR 280.72 AND 15A NCAC 2N .0803 REGULATORY REQUIREMENTS. THIS REPORT COVERS THE REMOVAL OF THREE UNDERGROUND FUEL TANKS.

IF YOU HAVE ANY QUESTIONS, OR IF WE CAN BE OF ANY ADDITIONAL SERVICE, PLEASE FEEL FREE TO CONTACT US.

SINCERELY,

LYLES CHEVROLET COMPANY

Ross Wall

ROSS WALL,
TREASURER

LYLES CHEVROLET COMPANY, P.O. BOX 5408, HIGH POINT, NC 27262, 919-884-2288.

UST Closure and Site Investigation Report

Lyles Chevrolet
High Point, North Carolina
ENSCI Job #S92082

Prepared for

Lyles Chevrolet Company, Inc.

February 17, 1993

Chris Boggs
Environmental Scientist

Henry M. Havener
Project Manager

ENSCI Corporation
1108 Old Thomasville Road
High Point, North Carolina 27260
(919) 883-7505

Table of Contents

1. Introduction

ENSCI Corporation was contracted by Lyles Chevrolet Company, Inc. to remove three underground storage tanks (USTs) from their facility located at 1800 North Main Street in High Point, North Carolina (see **Figure 1**). The USTs, which had been out of service for approximately 10 years, consisted of one 7,500-gallon gasoline tank, one 1,000-gallon gasoline tank, and one 1,000-gallon diesel tank. Site work was performed December 22-23, 1992.

This UST Closure and Site Investigation Report will satisfy state and federal requirements under 40 CFR 280.72 and 15A NCAC 2N .0803. In connection with these requirements, a Site Investigation Report for UST Closure (form GW/UST-2) is included as Appendix A.

2. Scope of Work

In order to perform permanent closure of the USTs in accordance with state and federal requirements, ENSCI developed the following scope of work:

- Submitting all necessary state and local regulatory notifications
- Removing and disposing of the USTs
- Performing any necessary release prevention
- Conducting field screening in order to identify any potentially petroleum hydrocarbon-impacted soil and determine the extent of excavation
- Performing site characterization.

The following sections describe in detail ENSCI's activities and findings.

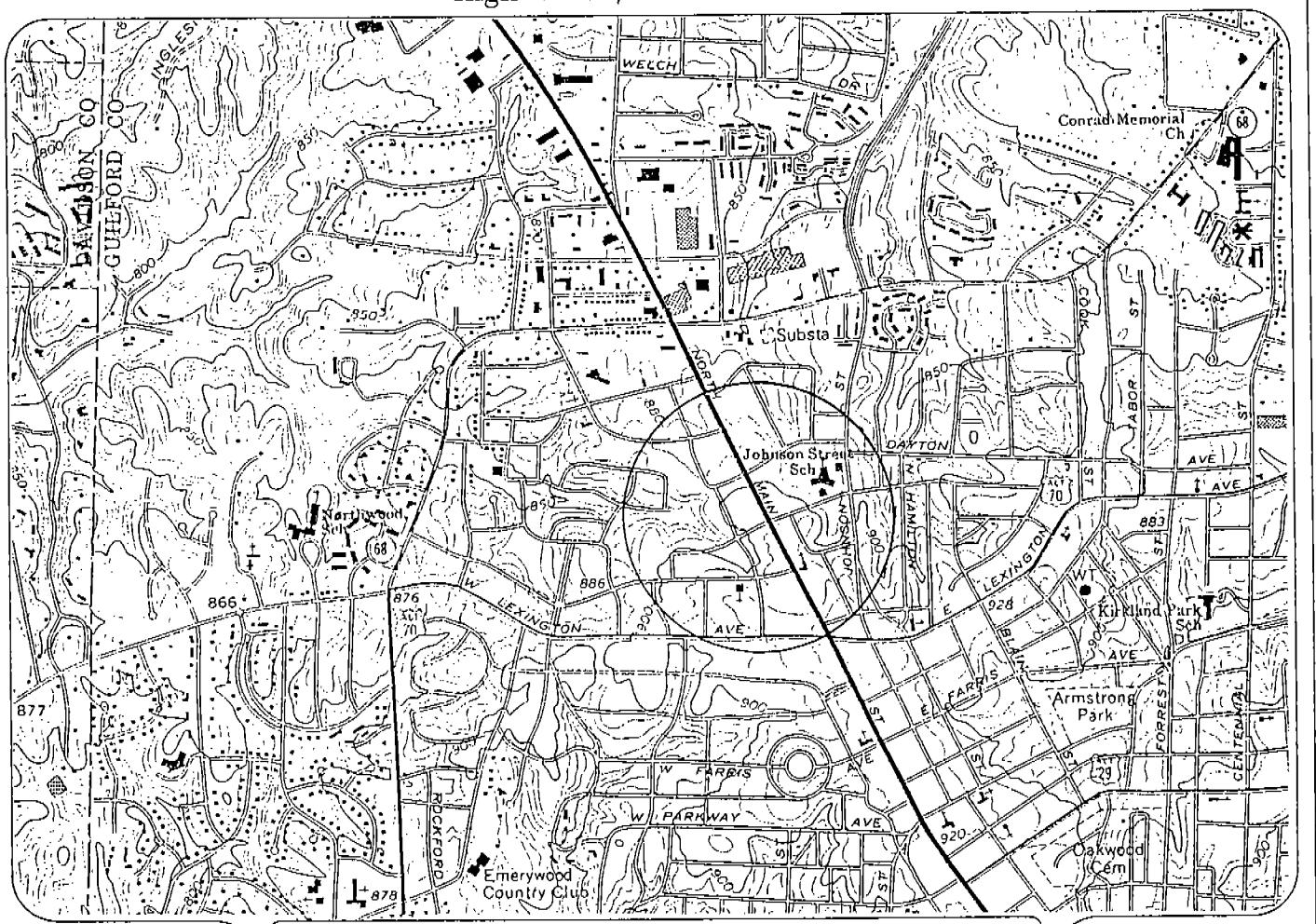
3. Preparation for UST Removal

Prior to removal of the USTs, all necessary notifications were filed with state and local authorities.

After mobilizing to the site on December 22, 1992, soil above each UST was removed with a backhoe until the point at which the top of the tank was exposed (2 feet). At this

TOPOGRAPHICAL MAP

Lyles Chevrolet
High Point, North Carolina



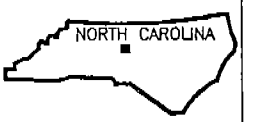
USGS HIGH POINT WEST 7.5 MINUTE QUADRANGLE

DATE OF MAP: 1969 PHOTOREVISION DATE:1987

PHOTOREVISION DENOTED IN PURPLE (COLOR MAPS ONLY)

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

SCALE 1:24000



QUADRANGLE LOCATION

ROAD CLASSIFICATION

HEAVY-DUTY
MEDIUM-DUTY
LIGHT-DUTY
FOOT TRAIL
WGN & JEEP TRACK
UNIMPROVED ROAD

U.S. ROUTE
STATE ROUTE
INTERSTATE ROUTE

ENSCI® CORPORATION
HIGH POINT, NORTH CAROLINA

FOR: LYLES CHEVROLET	CITY: HIGH POINT
TITLE: TOPOGRAPHIC MAP	STATE: NORTH CAROLINA
SCALE: 1"=2000'	DWN BY: DJ
DWG NAME: USGS-1	FIGURE: 1
DATE: 12/31/92	CK BY: CB
JOB #: S92082	

point, all product lines leading from the tanks were disconnected and removed.

Residual liquids which remained in the tanks had been previously pumped out. ENSCI measured the liquids in the tanks, and found that only minimal amounts remained.

For safety, the internal atmosphere of each UST was tested with a lower explosive limit meter (explosimeter) before additional excavation. The vapors inside each tank were measured to be greater than 10 percent of the lower explosive limit. Therefore, the tanks were purged using dry ice in accordance with the methods outlined American Petroleum Institute publication 1604 until the vapor level met this criterion. Following these activities, it was determined to be safe to continue with tank removal.

4. UST Removal and Disposal

The three USTs which were removed from the Lyles Chevrolet site were located in two separate excavations (see **Figure 2**).

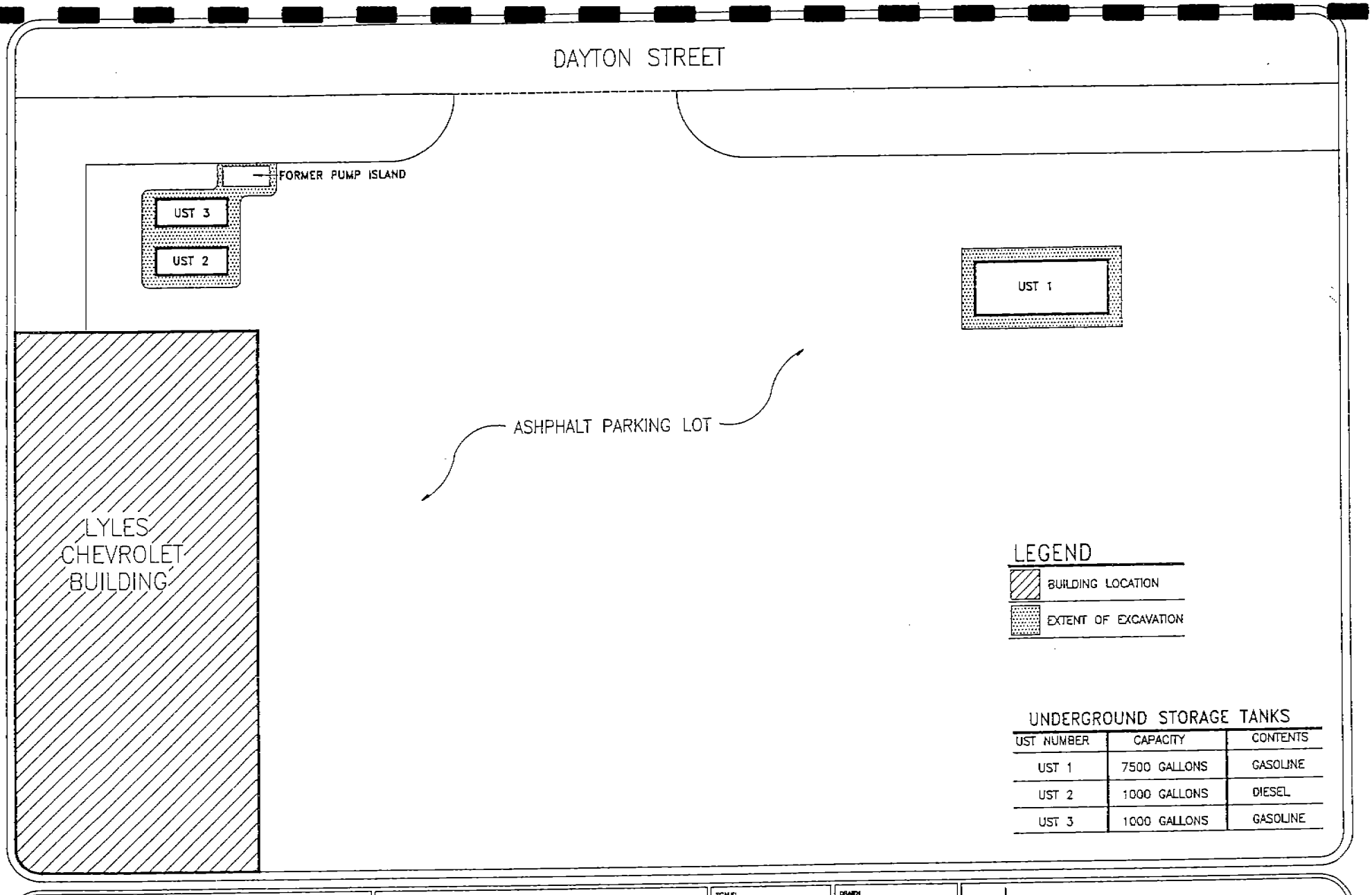
Excavation of each tank proceeded to the depth of the bottom of the tank. At that point, each UST was removed with a crane and cleaned of debris. Each tank was inspected by ENSCI personnel for any indications of a release (see Table 1).

Table 1: UST Condition

UST Designation/ Dimensions	Volume	Present/ Former Contents	Tank Condition
UST #1 20' x 8"	7,500 gallons	gasoline	minor corrosion; no visible holes
UST #2 10'6" x 48"	1,000 gallons	diesel	major corrosion; holes up to ½-inch in diameter
UST #3 10'6" x 48"	1,000 gallons	gasoline	major corrosion; holes up to 1-inch in diameter

Following inspection, the tanks were labelled in preparation for transporting them to the disposal site. The Certificate of Disposal is included as Appendix B.

In addition to these USTs, all product lines leading to a pump island, and the pump island itself, were removed from the site.



UNDERGROUND STORAGE TANKS

UST NUMBER	CAPACITY	CONTENTS
UST 1	7500 GALLONS	GASOLINE
UST 2	1000 GALLONS	DIESEL
UST 3	1000 GALLONS	GASOLINE

ENSCI® CORPORATION
HIGH POINT, NORTH CAROLINA

FOR: LYLES CHEVROLET
CITY: HIGH POINT | STATE: NORTH CAROLINA
TITLE: EXCAVATION AREAS

SCALE: 1"=20'	DRAWN BY: DJ
DATE: 12/30/92	CHECK BY: CB
JOB NO. S92082	TYPE: TANK PULL
DWG NAME: LYLES-1	REV:
	PICTURE NUMBER: 2

0 5 10 15 20 30 40
GRAPHIC SCALE IN FEET
1"=20'

5. Field Observations and Screening

Throughout excavation, soil was screened visually and with a photoionization detector (PID) to determine the potential presence or absence of petroleum hydrocarbons (see Table 2). The PID detects airborne photoionizable gases and vapors on a scale from 0 to 2,500 parts per million, relative to the calibration gas. Based on past experience, soil containing petroleum hydrocarbons in excess of the DEHNR action limit (10 parts per million) generally registers greater than 100 parts per million on the PID.

Table 2: Field Observations

Area	Observations
UST #1 (gasoline)	No evidence of soil staining or odor; no measurable PID screening levels.
UST #2 (diesel)	No evidence of soil staining or odor; PID levels beneath east end of tank at 11 feet below grade 15 to 20 ppm; unmeasurable elsewhere in excavation.
UST #3 (gasoline)	No evidence of soil staining, but strong odor throughout bottom of excavation; PID levels 1,000 ppm beneath the north end of the tank, 1,250 ppm beneath the south end of the tank. Additional excavation to 12 feet below grade, at which PID level measured 5 to 13 ppm.
Pump Island	No evidence of soil staining; PID levels up to 30 ppm.

As indicated in Table 2, significant odor and PID screening levels were encountered beneath UST #3 from the depth of the bottom of the tank, located at approximately 6 feet below grade, to a depth of 10 feet below grade. In an attempt to remove this potential contamination, ENSCI excavated to a depth of approximately 12 feet below grade, at which point PID levels did not indicate a probability of contamination.

Neither groundwater nor liquid hydrocarbons (free product) were encountered during ENSCI's site activities.

Following sample collection, which is discussed below, all soil which was removed from the excavation of UST #1 was used as backfill. In addition, on top of the soil, layers of sand rock and crusher run gravel were placed to maintain the parking lot integrity. Soil which was removed from the excavation of UST #2, UST #3, and the pump island was

temporarily staged onsite on polyethylene sheeting in accordance with DEHNR guidelines. This area was backfilled using sand rock and crusher run gravel.

6. Soil Sampling

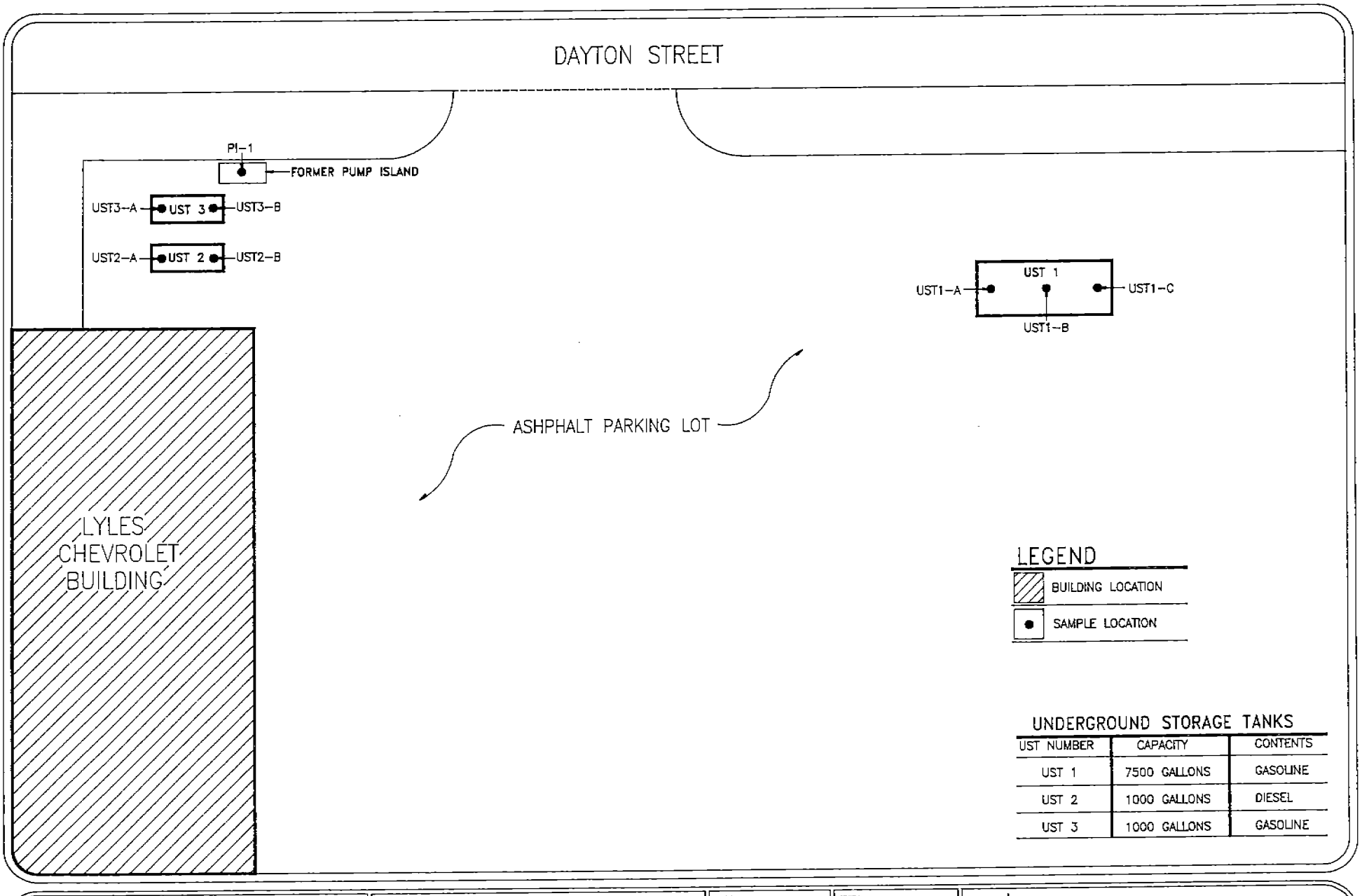
6.1 Soil Sample Collection and Backfilling

As part of the limited site assessment required under 40 CFR 280.72, 15A NCAC 2N .0803, and DEHNR guidelines, soil samples were collected beneath the area occupied by each tank and beneath the former location of the pump island. **Figure 3** illustrates all sample locations.

A stainless steel hand auger was used to collect all samples. When sampling equipment was reused, ENSCI personnel used the following procedure in order to prevent cross contamination:

1) Wash with nonphosphate detergent and tap water; brush to remove particulate matter.
2) Rinse with tap water.
3) Rinse with 10% nitric acid solution.
4) Rinse with organic-free deionized water.
5) Rinse with pesticide-grade isopropyl alcohol.
6) Rinse with organic-free deionized water.
7) Air dry as long as possible.

As an additional measure in preventing cross contamination, latex gloves were worn by the sampling technician during these activities. Gloves were changed between samples. All samples were packed in ice for cooling to 4°C and shipped to Research and Analytical Laboratories, Inc. in Kernersville, North Carolina for analysis. Chain of custody forms and analytical reports are included in Appendix C. Results are discussed in the sections that follow.



UNDERGROUND STORAGE TANKS

UST NUMBER	CAPACITY	CONTENTS
UST 1	7500 GALLONS	GASOLINE
UST 2	1000 GALLONS	DIESEL
UST 3	1000 GALLONS	GASOLINE

ENSCI® CORPORATION
HIGH POINT, NORTH CAROLINA

FOR: LYLES CHEVROLET
CITY: HIGH POINT | STATE: NORTH CAROLINA
TITLE: SAMPLE LOCATION MAP

SCALE: 1"=20'
DRAWN BY: DJ
DATE: 12/30/92
CHECK BY: CB
JOB NO.: S92082
TYPE: TANK PULL
DWG NAME: LYLES-1
REVI
FIGURE NUMBER: 3

0 5 10 15 20 30 40
GRAPHIC SCALE IN FEET
1"=20'

6.2 Soil Analytical Methods and Results

All soil samples which were collected from beneath UST #1 (UST 1A through UST 1C) were analyzed using EPA Method 5030, in accordance with DEHNR guidelines for gasoline tanks. Because of its proximity to the diesel tank (UST #2), samples collected beneath gasoline tank UST #3 (samples UST 3A and UST 3B) were analyzed using EPA Methods 3550 and 5030, in accordance with DEHNR guidelines for diesel tanks (note that this is inclusive of EPA Method 5030, the requirement for gasoline tanks). Samples collected beneath the diesel tank, as well as the sample collected beneath the pump island, were also analyzed using EPA Methods 3550 and 5030. Analytical results are illustrated in Table 3. Copies of the original laboratory reports are included as Appendix C.

Table 3: Soil Analytical Results
In Parts Per Million

Sample Location	Sample Depth (feet)	Sample Designation	EPA Method 3550	EPA Method 5030
UST #1 gasoline	14	UST 1A	NT	<10*
	14	UST 1B	NT	<10*
	14	UST 1C	NT	<10*
UST #2 diesel	12	UST 2A	<10*	<10*
	12	UST 2B	<10*	<10*
UST #3 gasoline	12	UST 3A	<10*	<10*
	12	UST 3B	<10*	<10*
Pump Island	3	PI 1	2,100	<10*

NT Analysis not requested.
* No detection at the practical quantitation limit of 10 parts per million.

As illustrated in the table, there was no detection of petroleum hydrocarbons beneath the USTs, but a detection of 2,100 parts per million petroleum hydrocarbons was indicated for the sample collected beneath the pump island. This sample was collected approximately 5 feet below grade by hand augering into the bottom of the pump island

excavation. The detected level of petroleum hydrocarbons exceeds the maximum action level for this method (1,200 parts per million), which is determined according to site conditions.

Because these results indicated a likelihood that the DEHNR would require additional action, ENSCI remobilized to the Lyles Chevrolet site on February 9, 1993, and excavated soil in the former location of the pump island. The soil was screened with an Organic Vapor Analyzer (OVA, a flame ionization detector), which indicated maximum levels of 5 parts per million. Soil was excavated to a depth of 7 feet below grade, and added to the stockpiled soil already onsite. A sample of native soil was collected from a depth of approximately 7.5 feet below grade using the quality control procedure outlined above. It was sent to Research & Analytical Laboratories, Inc. for analysis using EPA Methods 3550 and 5030. Results (see Appendix C) indicate no detection of total petroleum hydrocarbons using EPA Method 5030. Using EPA Method 3550, however, 894 parts per million total petroleum hydrocarbons were detected.

In order to determine the sensitivity of groundwater to contamination from petroleum hydrocarbons which remain in soil beneath the pump island, ENSCI completed a DEHNR Site Sensitivity Evaluation (SSE). As indicated on the completed SSE (see Appendix D), the Lyle's Chevrolet site is among the least sensitive to groundwater contamination, and the site-specific action level for petroleum hydrocarbons detected using EPA Method 3550 is 1,200 parts per million.

7. Summary

Field screening and site observations indicated a petroleum hydrocarbon odor and organic vapor levels (via field screening with a PID) in excess of 1,000 parts per million in the vicinity of UST #3. Excavation proceeded to a depth of 12 feet below grade, at which point odors and PID screening levels indicated that all impacted soil had been removed.

Soil samples were collected by hand augering approximately 2 feet beneath the bottom of each excavation after the USTs and additional soil had been removed. Analysis of samples collected beneath the USTs indicated no detectable levels of petroleum hydrocarbons. Analysis of a sample collected beneath the pump island indicated 2,100 parts per million total petroleum hydrocarbons using EPA Method 3550. Therefore, ENSCI remobilized to the site and dug beneath the pump island to a depth of 7 feet below grade. A sample of native soil collected just beneath this depth indicated 894 parts per million total petroleum hydrocarbons using EPA Method 3550. The soil cleanup level

established through completion of a Site Sensitivity Analysis is 1,200 parts per million total petroleum hydrocarbons under this method.

All soil which was removed from the excavations was used as backfill, with the exception of the potentially contaminated soil removed from the vicinity of UST #3 and the pump island. Sand rock and crusher run gravel were used for the top layer of backfill. Soil removed from the vicinity of UST #3 and the pump island remains stockpiled onsite in accordance with DEHNR guidelines for temporary storage pending disposal.

Appendix A

Site Investigation Report for UST Closure

(GW/UST-2) Site Investigation Report For Permanent Closure or Change-In-Service of U.S.T.

FOR TANKS IN **NC**

Return Completed Form To:
The appropriate DEM Regional Office according to the county of the facility's location. [SEE MAP ON REVERSE SIDE OF OWNER'S COPY (PINK) FOR REGIONAL OFFICE ADDRESS].

State Use Only
I.D. Number _____
Date Received _____

INSTRUCTIONS

Complete and return within (30) days following completion of site investigation.

I. Ownership of Tank(s)

LYLES CHEVROLET
Owner Name (Corporation, Individual, Public Agency, or Other Entity)
1800 NORTH MAIN STREET
Street Address
GUILFORD
County
HIGH POINT, NC 27262
City State Zip Code
(919) 884-2288
Area Code Telephone Number

II. Location of Tank(s)

LYLES CHEVROLET
Facility Name or Company
-
Facility ID # (if available)
1800 NORTH MAIN STREET
Street Address or State Road
GUILFORD HIGH POINT, NC 27262
County City Zip Code
(919) 884-2288
Area Code Telephone Number

III. Contact Person

MR. ROSS WALL — Name
Job Title
(919) 884-2288 — Telephone No. (Area Code)

Closure Contractor (Name): ENSCI CORPORATION (Address): 1108 OLD THOMASVILLE RD. HIGH POINT, NC 27260 Telephone No. (Area Code): (919) 883-7505

Lab (Name): RESEARCH & ANALYTICAL LABS (Address): 106 SHORT ST. KERNERSVILLE, NC 27284 Telephone No. (Area Code): (919) 996-2841

IV. U.S.T. Information / V. Excavation Condition

Tank No.	Size in Gallons	Tank Dimensions	Last Contents	Water In Excavation		Free Product		Notable Odor or Visible Soil Contamination	
				Yes	No	Yes	No	Yes	No
1	7,500	22' x 8'	GASOLINE		X		X		X
2	1,000	10'6" x 48"	DIESEL		X		X		X
3	1,000	10'6" x 48"	GASOLINE		X		X	X	

VI. Additional Information Required

See reverse side of pink copy (owner's copy) for additional information required by N.C. - DEM in the written report and sketch.

VII. Check List

Check the activities completed.

- [X] Contact local fire marshall
- [X] Notify DEM Regional Office before abandonment
- [X] Drain & flush piping into tank.
- [X] Remove all product and residuals from tank
- [X] Excavate down to tank
- [X] Clean and inspect tank.
- [X] Remove drop tube, fill pipe, gauge pipe, vapor recovery tank connections, submersible pumps and other tank fixtures.
- [X] Cap or plug all lines except the vent and fill lines.
- [X] Purge tank of all product & flammable vapors.
- [X] Cut one or more large holes in the tanks.
- [X] Backfill the area.

Date Tank(s) Permanently closed: 12/23/92
Date of Change-in-Service: _____

ABANDONMENT IN PLACE
- [ ] Fill tank until material overflows tank opening;
- [ ] Plug or cap all openings;.
- [ ] Disconnect and cap or remove vent line
- [ ] Solid inert material used - specify: _____

REMOVAL
- [X] Create vent hole
- [X] Label tank
- [X] Dispose of tank in approved manner

Final tank destination: MID-EAST INDUSTRIAL, CARTHAGE, NORTH CAROLINA

VIII. Certification (Read and Sign)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Print name and official title of owner or owner's authorized representative	Signature	Date Signed
CHRIS BOGGS, ENVIRONMENTAL SCIENTIST/ ENSCI		1/6/92

Appendix B

Certificate of Disposal for USTs

TANK DISPOSAL MANIFEST

1) **Tank Owner/Authorized Representative:** Name and Mailing Address

ENSCI Corporation

1108 Old Thomasville Road, High Point, North Carolina 27260

2) **Tank Owner/Authorized Representative:** Phone No. **(919) 883-7505**

3) **Description of Tanks:**

Tank No.	Capacity	Previous Contents	Comments
L-101	6,000	Gasoline	Tank appeared to be in good shape
L-102	2,000	Gasoline	Tank appeared to be in good shape
L-103	2,000	Diesel	Tank had pitted hole through it.

4) **Tank Owner/Authorized Representative Certification:** The undersigned certifies that the above listed storage tanks have been removed from the premises of the tank Owner.

Chris Boggs	[signature]	1-8-93
Printed/Typed Name	Signature	Month/Day/Year

5) **Transporter:** The undersigned certifies that the above listed storage tanks have been removed from the premises of the tank Owner.

Mr. Ken Eder	[signature]	12/22/92
Printed/Typed Name	Signature	Month/Day/Year

6) **Decontamination Manager:** The undersigned certifies that the above listed storage tanks have been cleaned and scrapped.

Mr. Ken Eder	[signature]	12/22/92
Printed/Typed Name	Signature	Month/Day/Year

7) **Disposal Certification:** The undersigned certifies that the above-named storage tank(s) have been cut into scrap pieces and accepted by the metal recycling facility.

Recycling Facility: Mid East Industrial

Mr. Ken Eder	[signature]	1/5/93
Printed/Typed Name	Signature	Month/Day/Year

Appendix C

Analytical Reports for Soil Samples

RESEARCH & ANALYTICAL LABORATORIES, INC.

Analytical/Process Consultations

30 December 1992

Ensci Corporation
1108 Old Thomasville Road
High Point, North Carolina 27260
Attn: Mr. Tom Lennon

Job Number: S92082
Project Name: Lyles Chevrolet

Sample Number	Date Taken	Time (hrs)	Station Location	RAL Sample#	EPA* Method	Results (ppm)
UST 1A	12/22/92	1530	UST 1	155565	5030	<10
UST 1B	12/22/92	1510	UST 1	155566	5030	<10
UST 1C	12/22/92	1530	UST 1	155567	5030	<10
UST 2A	12/23/92	1500	UST 2	155568	5030	<10
					3550	<10
UST 2B	12/23/92	1500	UST 2	155569	5030	<10
					3550	<10
UST 3A	12/23/92	1510	UST 3	155570	5030	<10
					3550	<10
UST 3B	12/23/92	1520	UST 3	155571	5030	<10
					3550	<10
PI 1	12/23/92	1530	Pump Island	155572	5030	<10
					3550	2,100

*EPA Method 5030 = Total Petroleum Hydrocarbons as Gasolilne
3550 = Total Petroluem Hydrocarbons as Diesel
ppm = parts per million
< = less than

RESEARCH & ANALYTICAL LABORATORIES, INC.
Analytical/Process Consultations
Phone [919] 996-2841

CHAIN OF CUSTODY RECORD

PO# 31885

JOB NO.	PROJECT NAME
592082	Lyles Chev.

SAMPLERS (SIGNATURE)

SAMPLE NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	WATER/WASTEWATER: 2L G (BNA, Herb./Pest.)	2 40ml Vials (VOA)	250ml G (TOX)	250ml P (TOC)	1L PG (BOD, TSS, Unpreserved, etc.)	1L G (Phenol, Oil & Grease)	1L PG (COD, N,P)	1L PG (Metals, Hardness)	Sterile PG (CYANIDE)	Sterile PG (Coliform)	MISC.	REQUESTED ANALYSIS
UST 1A	12/22/92	1530		✓	UST 1	1												5030
UST 1B	12/22/92	1530		✓	UST 1	1												5030
UST 1C	12/22/92	1530		✓	UST 1	1												5030
UST 2A	12/23/92	1500		✓	UST 2	2												3550, 5030
UST 2B	12/23/92	1500		✓	UST 2	2												3550, 5030
UST 3A	12/23/92	1510		✓	UST 3	2												3550, 5030
UST 3B	12/23/92	1520		✓	UST 3	2												3550, 5030
PI	12/23/92	1570		✓	Pump Island	2												3550, 5030

RELINQUISHED BY	DATE/TIME	RECEIVED BY	REMARKS:
RELINQUISHED BY	DATE/TIME	RECEIVED BY	

RESEARCH & ANALYTICAL LABORATORIES, INC.

Analytical/Process Consultations

11 February 1993

Ensci Corporation
1108 Old Thomasville Road
High Point, NC 27260

Attention: Mr. Chris Boggs

Project Number: S92082
Project Name: Lyles

Sample Number	Date Taken	Time (hrs)	Station Location	RAL Sample#	EPA* Method	Results (ppm)
PI-1	2/9/93	1130	Pump Island 7.5'	159414	5030	<10
					3550	894

*EPA Method 5030 = Total Petroleum Hydrocarbons as Gasoline
3550 = Total Petroluem Hydrocarbons as Diesel
ppm = parts per million
< = less than

RESEARCH & ANALYTICAL LABORATORIES, INC.

Analytical/Process Consultations
Phone (919) 996-2841

CHAIN OF CUSTODY RECORD

PO# 32079

JOB NO.	PROJECT NAME
592082	Lyle's

SAMPLERS (SIGNATURE): Chris Boggs

ENSCI Corporation

SAMPLE NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	WATER/WASTEWATER: 2L G (BNA, Herb./Pest.)	40ml Vials (VOA)	250ml G (TOX)	250ml P (TOC)	1L P,G (BOD, TSS, Unpreserved, etc.)	1L G (Phenol, Oil & Grease)	1L P,G (COD, N,P)	1L P,G (Metals, Hardness)	Sterile P,G (Coliform)	4oz Jar	MISC.	REQUESTED ANALYSIS
PI-2	2/9/93	1130		X	Pump Island 7.5'	1										1		5030 / 3550
159414																		

RELINQUISHED BY	DATE/TIME	RECEIVED BY
[signature]	2-9-93 2:00	Mary Tobasfeld
RELINQUISHED BY	DATE/TIME	RECEIVED BY

REMARKS:

ice

Appendix D

Site Sensitivity Evaluation

SITE SENSITIVITY EVALUATION FOR PETROLEUM CONTAMINATED SOIL

The purpose of the Site Sensitivity Evaluation (SSE) is to evaluate the sensitivity of groundwater to contamination by the release of petroleum related substances from the vadose zone. The "in-situ" soil clean-up levels, based on total petroleum fuel hydrocarbons (TPFH) and or oil and grease (O&G), is determined by the SSE score; i.e., higher SSE scores require a lower TPFH or O&G soil clean-up level. The SSE is only applicable for petroleum contaminated sites.

If groundwater levels at the site are generally known, or can be determined from field observations, one boring may be sufficient to obtain information necessary to complete the SSE. Also, if a release is discovered during a tank excavation, field investigations such as test pits, soil borings, or deeper excavation into the tank pit itself, may provide the necessary information.

A Site Sensitivity Evaluation should be performed on <u>all</u> sites that meet the following criteria:

1). Contaminated soils are located 5 feet or more from the water table, top of bedrock or transmissive indurated sediments (shell limestone, fractured shale or sandstone, etc.) at sites in category A or B. The applicability of the separation distance on sites in category C, D, or E will be determined by DEM.

2). Contaminated soil does not create a human exposure pathway via ingestion, absorption, or inhalation.

NOTE: *For sites where the criteria in 1 and 2 above are <u>not</u> met, the clean-up levels will be 10 ppm TPFH (EPA Method 5030), 40 ppm TPFH (EPA Method 3550), or 250 ppm TPFH (EPA Method 9071) (unless DEM specifies otherwise). The references to EPA methods 5030 and 3550 throughout this document include the use of the California GC-FID method for TPFH and are referred to only as 5030 and 3550 for brevity.*

The Site Sensitivity Evaluation (SSE) will determine the soil clean-up levels that must be achieved for each site. Depending on the SSE scores, the final clean-up level for site soils may range between 10 to 300 ppm TPFH (for EPA Method 5030), 40 to 1200 ppm TPFH (for EPA Method 3550), and 250 to 3000 ppm O&G (for EPA Method 9071). Soils exhibiting contamination levels **greater than** (>) 300 ppm TPFH (for EPA Method 5030) or > 1200 ppm TPFH (for EPA Method 3550) , or > 3000 ppm TPFH (for EPA Method 9071) **must** be remediated (unless otherwise directed by DEM).

"Contaminated soil" in this document refers to soils containing greater than 10 ppm TPFH for low boiling point fuels, greater than 40 ppm TPFH for medium boiling point fuels and greater than 250 ppm for oil and grease. Remedial activities will <u>not</u> be required on soil exhibiting TPFH levels of less than or equal to (≤) 10 ppm TPFH (EPA Method 5030), levels

of ≤ 40 ppm TPFH (EPA method 3550), and O&G levels of ≤ 250 ppm (EPA Method 9071). However, in cases where groundwater have been contaminated or other special site conditions exist, a lower clean-up level and/or additional investigation may be required by the DEM..

In any case, whenever soil remediation is necessary, the treatment/disposal technologies that are utilized should be cost effective and provide adequate protection of human health and the environment.

SITE SENSITIVITY EVALUATION (SSE)

STEP 1: Site Characteristics Evaluation

The sensitivity of groundwater to contamination from petroleum contaminated soils is evaluated by assessing 5 specific site characteristic. These characteristics are rated in accordance with their potential for contributing to the contamination of groundwater; the greater the potential contribution, the higher the score. The overall sensitivity of a site is determined by a numerical value representing the sum of values for each site characteristic.

Complete the SSE score sheet (Table 1) and proceed to step 2

Explanation of Site Characteristics

Grain Size - The main objective of this analysis is to estimate soil permeability, potential for contaminant attenuation, and whether zone restrictions for contaminant transfer exist.

Sample Collection and Location: The sample collected for determination of grain size should be representative of the predominant soil type found in the area of the deepest contaminated soils located beneath the tank pit, or in proximity to the tank pit (in the apparent downgradient direction.) Retaining this soil sample for future reference is advisable.

Sample Classification: The soil sample collected as described above should be classified according to the Unified Soil Classification System (ASTM designation D-2487) or the U.S. Department of Agriculture's method of soil classification. (A visual and textural field inspection will suffice.)

NOTE: *Sample collection and classification should be performed by a qualified person, who through a combination of training and experience, is competent to evaluate the conditions existing at an underground storage tank (UST) system site, including the physical and chemical conditions of the subsurface. (A geologist, soils scientist, engineer or technician active in this field and with experience should be qualified).*

Relict structures, sedimentary structures, and/or textures present in the zone of contamination and underlying "soils"- Structures in soils that may significantly increase the permeability such as numerous quartz veins, fractures, coarse grained sandy bed in clays and silts, weathered coarse grained igneous intrusions, etc.

Distance from location of deepest contaminated soil to water table - The determination may be based upon water table wells in the immediate vicinity, mottling of the soil, an auger hole in the excavation or immediate vicinity, or specific knowledge of an area. If an auger hole is made in the excavation, it shall immediately be grouted with neat cement or bentonite.

Is the top of bedrock or transmissive indurated sediments located above the water table? Is there evidence of a water table at the top of bedrock or top of transmissive indurated sediments (shell limestone, fractured shale or sandstone, etc.)?

Artificial conduits present within the zone of contamination - Are there water lines, sewer lines, telephone cables, product dispensing piping, etc., in contamination zone?

Complete the SSE score sheet (Table 1). Proceed to Step 2.

STEP 2: Initial Clean-up Level (See Table 2)

Once the SSE score has been obtained, select the corresponding initial clean-up level for the type of hydrocarbons (low boiling point, medium boiling point, or oil and grease) released on site. Proceed to Step 3.

STEP 3: Final Clean-up Level (See Table 2 and Site Category Descriptions)

Determine and document the site category (A, B, C, D, or E) based on field evaluations. Use Table 2 and the Site Category Descriptions to select the corresponding final clean-up level. Based on the final clean-up levels obtained, determine the quantity of soil that requires remediation.

Submit data and other evidence used in the determination of the final cleanup level to the appropriate Regional Office. Upon review of the information provided, the Regional Office will verify the site's final soil cleanup level. Upon completion of the SSE, the responsible party should immediately begin remediation of soils containing TPFH concentrations in excess of the final proposed cleanup level. The responsible party should maintain accurate records of the remediation process and be prepared to justify all remediation activities.

Table 1

Site Sensitivity Evaluation (SSE)

Site Characteristics Evaluation (Step 1)

Characteristic	Condition	Rating	
Grain Size*	Gravel Sand Silt Clay	150 100 50 0	0
Are relict structures, sedimentary structures, and/or textures present in the zone of contamination and underlying "soils".	Present and intersecting the water table. Present but not intersecting the water table. None present.	10 5 0	0
Distance from location of deepest contaminated soil** to water table.	5 - 10 feet >10 - 40 feet >40 feet	20 10 0	20
Is the top of bedrock or transmissive indurated sediments located above the water table?	Yes No	20 0	0
Artificial conduits present within the zone of contamination.	Present and intersecting the water table. Present but not intersecting the water table. Not present.	10 5 0	5
		Total Site Characteristics Score:	25

* **Predominant** grain size based on Unified Soil Classification System or U.S. Dept. of Agriculture's Soil Classification Method.

** (>10 ppm TPH by Method 5030; >40 ppm TPH by Method 3550; >250 ppm O&G by Method 9071)

Table 2

Site Sensitivity Evaluation (SSE)

Initial Cleanup Level (Step 2) — Final Cleanup Level (Step 3)

Low Boiling Point Hydrocarbons

Total Site Characteristics Score	Initial Cleanup Level TPFH (ppm) EPA Method 5030
>150	≤10
121-150	20
91-120	40
61-90	60
31-60	80
0-30	100

Select Site Category* →

	Final Cleanup Level
Category A & B (Multiply initial cleanup level by 1)	1 x ____ = ____ ppm
Category C & D (Multiply initial cleanup level by 2)	2 x ____ = ____ ppm
Category E (Multiply initial cleanup level by 3)	3 x ____ = ____ ppm

Medium Boiling Point Hydrocarbons

Total Site Characteristics Score	Initial Cleanup Level TPFH (ppm) EPA Method 3550
>150	≤40
121-150	80
91-120	160
61-90	240
31-60	320
0-30	400

Select Site Category* →

	Final Cleanup Level
Category A & B (Multiply initial cleanup level by 1)	1 x ____ = ____ ppm
Category C & D (Multiply initial cleanup level by 2)	2 x ____ = ____ ppm
Category E (Multiply initial cleanup level by 3)	3 x 400 = 1200 ppm

Oil & Grease (O&G)

Total Site Characteristics Score	Initial Cleanup Level O&G (ppm) EPA Method 9071
>150	≤250
121-150	400
91-120	550
61-90	700
31-60	850
0-30	1000

Select Site Category* →

	Final Cleanup Level
Category A & B (Multiply initial cleanup level by 1)	1 x ____ = ____ ppm
Category C & D (Multiply initial cleanup level by 2)	2 x ____ = ____ ppm
Category E (Multiply initial cleanup level by 3)	3 x ____ = ____ ppm

* See Site Category Descriptions

TABLE 3
SITE SENSITIVITY EVALUATION (SSE)

SITE CATEGORY DESCRIPTIONS

CATEGORY A (*Site meets any one of the criteria)*

1. Water Supply well(s) contaminated and not served by accessible public water supply.

2. Vapors present in confined areas at explosive or health concern levels.

3. Treated surface water supply in violation of the safe drinking water standards.

CATEGORY B (*Any One*)

1. Water supply well(s) contaminated, but served by accessible public water supply.

2. Water supply well(s) within 1500 feet of site, but not contaminated and not served by accessible public water supply.

3. Vapors present in confined areas but not at explosive or health concern levels.

CATEGORY C (*Both*)

1. No known water supply well(s) contaminated.

2. Water supply well(s) greater than 1500 feet from site but not served by accessible public water supply.

CATEGORY D (*Both*)

1. No known water supply well(s) contaminated.

2. Water supply well(s) within 1500 feet of site but served by accessible public water supply.

CATEGORY E (*Both*)

1. No known water supply well(s) contaminated or within 1500 feet of site.

2. Area served by accessible public water supply.

Site Sensitivity Evaluation Comment

Please note the following items explaining completion of the Site Sensitivity Analysis:

In order to determine the distance of the water table from the deepest contaminated soil, ENSCI considered the deepest contaminated soil to be located at approximately 5 feet below grade, the depth of the only contaminated sample. Adjacent to the pump island, the excavation of UST #3 reached a depth of 12 feet below grade, and groundwater was not encountered. Therefore, contaminated soil is considered to be at least 5 feet above the water table.

Secondly, ENSCI assumed that the site falls into Category E. This category requires that no known water supply wells are contaminated, that no water supply wells exist within a 1,500-foot radius of the site, and that the area is served by an accessible public water supply. Although it was established that the surrounding area is supplied with water by the City of High Point, no reconnaissance of the surrounding area was performed. Therefore, it is possible that non-drinking water wells exist within a 1,500-foot radius of the site. This would place the site in Category D. Regardless, the site is among the least vulnerable for transmission of soil contamination into groundwater.